

REMARKS

This Amendment is submitted in response to the Office Action dated April 5, 2005. In the Office Action, the Patent Office rejected Claims 1, 10-12, 14 and 19 under 35 U.S.C. §103(a) as being unpatentable by *Isnardi* (U.S. Patent No. 6,687,384) in view of the *Shur* (U.S. Patent No. 6,330,672). Further, the Patent Office rejected Claims 2, 3 and 13 under 35 U.S.C. §103(a) as being unpatentable over *Isnardi* in view of *Shur* and further in view of *Tewfik et al.* (U.S. Patent No. 6,226,387). Still further, the Patent office rejected Claim 4 under 35 U.S.C. §103(a) as being unpatentable over *Isnardi* in view of *Shur* and further in view of *Tewfik et al.* and *Heinzelman et al.* (U.S. Patent No. 6,754,277). Finally, the Patent Office rejected Claims 6 and 16 under 35 U.S.C. §103(a) as being unpatentable over *Isnardi* in view of *Shur* and further in view of *Zhu* (U.S. Patent No. 5,821,887).

By the present Amendment, Applicants amended Claims 1 and 12. Further, Applicants submit that the amendments to the claims and the reasons that follow overcome the rejections made by the Patent Office and place the application in condition for allowance.

With respect to the rejection of Claims 1, 10-12, 14 and 19

under 35 U.S.C. §103(a) as being unpatentable over *Isnardi* in view of *Shur*, Applicants submit that the amendments to Claims 1 and 12 overcome the rejection under 35 U.S.C. §103(a) and place the application in condition for allowance. Notice to that effect is requested.

In the Office Action, the Patent Office alleged:

As to Claims 1 and 12, *Isnardi* discloses a method and apparatus for embedding data in encoded digital bitstreams comprising: providing a compressed bitstream (Fig. 4; col. 7, lines 58-60); identifying locations in the bitstream for embedding data into the bitstream (col. 8, lines 19-21) and replacing original codewords in the bitstream with alternate codewords having embedded data bits (col. 8, lines 21-25).

Shur discloses extracting a plurality of data bits (col. 11, lines 12 and 13) and producing embedded encrypting data bits based on the plurality of data bits from the bitstream (col. lines 62 and 63).

It would have been obvious to one of ordinary skill in the art at the time of the invention to employ the use of extracting a plurality of data bits (i.e. watermark data) and embedding the encrypted plurality of data bits from the bitstream in the system of *Isnardi*, as *Shur* teaches so as to protect digital information.

Independent Claim 1, as amended, requires the step of determining a type of coding of the compressed bitstream wherein the type of coding is inter coding or intra coding. Moreover, Claim 1 requires the step of producing embedded data bits based on the plurality of data bits from the bitstream wherein the embedded data bits are based on the coding of the compressed bitstream.

Independent Claim 12, as amended, requires means for determining a type of coding of the compressed bitstream wherein the type of coding is inter coding or intra coding. Moreover, Claim 12 requires means for identifying locations in the compressed bitstream wherein the locations are based on the type of coding of the compressed bitstream.

Isnardi merely teaches a method and apparatus for embedding data in an encoded video bitstream, for example, an MPEG or MPEG-like bitstream. Further, the bitstream includes redundantly coded syntax element values of which one is an overriding value. Moreover, the bitstream includes mandatorily coding the syntax element overriding value and replacing the non-overriding syntax element value with the data to be embedded.

Shur merely teaches a signal which is encoded, for example, perceptually and, during or after the perceptual coding process. Further, *Shur* teaches a digital watermark which is inserted into a quantized digital information signal resulting from the perceptual coding process. Moreover, *Shur* teaches a digital watermark which is imperceptible to one later listening to, displaying or otherwise utilizing the information signal.

Clearly, neither *Isnardi* nor *Shur*, taken singly or in combination, teaches or suggests the steps of determining a type

of coding of the compressed bitstream wherein the type of coding is inter coding or intra coding wherein the embedded data bits are based on the coding of the compressed bitstream as required by Claim 1, as amended. Neither *Isnardi* nor *Shur*, taken singly or in combination, teaches or suggests means for determining a type of coding of the compressed bitstream wherein the type of coding is inter coding or intra coding wherein the locations are based on the type of coding of the compressed bitstream as required by Claim 12, as amended.

On the contrary, *Isnardi* merely teaches "data hiding refers to the embedding of information into signals that have been coded in accordance with the MPEG or an MPEG-like coding standard." Further, *Isnardi* teaches "in an MPEG compressed bitstream, the quantization scale code (QSC) value is mandatorily explicitly coded in the first coded macroblock following a slice header and the embedded data is inserted into the QSC position in the slice header."

Shur teaches "the output binary bitstream contains a recoverable watermark generated by generator 130 and located in the bitstream according to the output of watermark location (index) selector 120." Further, *Shur* teaches "the signature may be a function of a number of identifying parameters as will be further described below, for example, associated with a specific

location in the distribution channel, date and time of distribution and type of distribution transaction." Still, *Shur* teaches "the digital watermark or signature is created by encrypting the chosen set of parameters. Moreover, *Shur* teaches "the watermark location (index) selector 120 operates via a signal from the transformation function 104 as to what coefficients are below the threshold. The above process of transformation 104 leads to a sequence of spectral samples whose coefficients are below the perceptual threshold which may referred to as a candidate watermarking sequence $B(i)$."

Nowhere does *Isnardi* or *Shur*, taken singly or in combination, teach or suggest the steps of determining a type of coding of the compressed bitstream wherein the type of coding is inter coding or intra coding wherein the embedded data bits are based on the coding of the compressed bitstream as required by Claim 1. Moreover, nowhere does *Isnardi* or *Shur*, taken singly or in combination, teach or suggest means for determining a type of coding of the compressed bitstream wherein the type of coding is inter coding or intra coding wherein the locations are based on the type of coding of the compressed bitstream as required by Claim 12, as amended.

Moreover, a person of ordinary skill in the art would never have been motivated to combine *Isnardi* and *Shur* in the manner

suggested by the Patent Office in formulating the rejection under 35 U.S.C. §103(a). More specifically, Applicants submit that the Patent Office is merely "piece-mealing" references together, providing various teachings and positively defined limitations of Applicants' method and system to deprecate the claimed invention. Of course, hindsight reconstruction of Applicants' invention is impermissible. Accordingly, Applicants respectfully submit that Claims 1 and 12, as amended, distinctly define the present invention from *Isnardi* and *Shur*, taken singly or in combination.

It is submitted that the question under §103 is whether the totality of the art would collectively suggest the claimed invention to one of ordinary skill in this art. In re Simon, 461 F.2d 1387, 174 USPQ 114 (CCPA 1972).

That elements, even distinguishing elements, are disclosed in the art is alone insufficient. It is common to find elements somewhere in the art. Moreover, most if not all elements perform their ordained and expected functions. The test is whether the invention as a whole, in light of all of the teachings of the references in their entireties, would have been obvious to one of ordinary skill in the art at the time the invention was made. Connell v. Sears, Roebuck & Co., 722 F.2d 1542, 220 USPQ 193 (Fed. Cir. 1983).

It is insufficient that the art disclosed components of Applicants' invention, either separately or used in other combinations. A teaching, suggestion, or incentive must exist to make the combination made by Applicants. Interconnect Planning Corp. v. Feil, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1988).

With the analysis of the deficiencies of *Isnardi* and *Shur* in mind, as enumerated above, no reason or suggestion in the evidence of record exists why one of ordinary skill in the art would have been led to modify *Isnardi* with *Shur* to produce the claimed invention. Therefore, *prima facie* obviousness has not been established by the Patent Office as required under 35 U.S.C. §103.

Even assuming that one having ordinary skill in the art could somehow have combined the references applied by the Patent Office, the references still lack the novel steps and structural relationships positively recited in amended Claims 1 and 12, respectively. Namely, neither *Isnardi* nor *Shur*, taken singly or in combination, teaches or suggests the steps of determining a type of coding of the compressed bitstream wherein the type of coding is inter coding or intra coding wherein the embedded data bits are based on the coding of the compressed bitstream as required by Claim 1, as amended. Further neither *Isnardi* nor

Shur, taken singly or in combination, teaches or suggests means for determining a type of coding of the compressed bitstream wherein the type of coding is inter coding or intra coding wherein the locations are based on the type of coding of the compressed bitstream as required by Claim 12, as amended. Accordingly, the rejection of Claims 1, 10-12, 14 and 19 under 35 U.S.C. §103(a) has been overcome and should be withdrawn. Notice to that effect is requested.

With respect to the rejection of Claims 2, 3 and 13 under 35 U.S.C. §103(a) as being unpatentable over *Isnardi* in view of *Shur* and further in view of *Tewfik et al.*, Applicants respectfully submit that the rejection has been overcome by the amendments to Claims 1 and 12, respectively, and for the reasons that follow.

In the Office Action, the Patent Office asserts:

"*Isnardi* discloses the compressed MPEG bitstream including MPEG-1 and/or MPEG-2 and/or subsequent MPEG standards (col. lines 3 and 4), in MPEG-2, the spatial scalability is already standardized.

Tewfik et al. disclose a method and apparatus for the scene-based watermarking of video data using spatial and temporal properties for embedding watermark (col. line 62 to col. 7 line 23.)

It would have been obvious to one of ordinary skill in the art at the time of the invention to employ the spatial and temporal for embedding data bits, as *Tewfik et al.* teach, in the system of *Isnardi* and *Shur*, so as to make embedding watermark invisible and robust."

However, Claim 2 requires the step of scanning the bitstream to find spatial locations for embedding data bits; Claim 3 requires the step of scanning the bitstream to find temporal locations for embedding data bits; and Claim 13 requires means for scanning the bitstream to locate blocks wherein the blocks contain the original codewords.

Tewfik et al., however, fail to teach or to suggest the steps and the elements of the present invention which are not taught by *Isnardi* and *Shur*, taken singly or in combination, as required by amended independent Claims 1 and 12, respectively, from which Claims 2 and 3 and Claim 13 depend, respectively. Accordingly, the rejection of Claims 2, 3 and 13 under 35 U.S.C. §103(a) has been overcome and should be withdrawn. Notice to that effect is requested.

With respect to the rejection of Claim 4 under 35 U.S.C. §103(a) as being unpatentable over *Isnardi* in view of *Shur* and further in view of *Tewfik et al.* and *Heinzelman et al.*, Applicants respectfully submit that the rejection has been overcome by the amendment to Claim 1 and for the reasons that follow.

In the Office Action, the Patent Office asserts:

"*Tewfik et al.* discloses using spatial and temporal properties for embedding data bits. However, *Tewfik et al.* does not disclose an error resilience

decoder for reliably recovering embedding data bits if the bitstream is subject to errors during transmission.

Heinzelman et al. discloses error resilience tools in MPEG-4 compressed video bitstream (col. 1, lines 53-57; col. 8, lines 25-43).

It would have been obvious to one of ordinary skill in the art at the time of the invention to employ error resilience decoder for recovering reliably embedding data bits in the system of Isnardi, Shur and Tewfik et al., as Heinzelman et al. teaches so as to effectively provide acceptable quality at the decoder."

However, Claim 4 requires the step of scanning the bitstream to find spatial or temporal locations for embedding data bits that can be reliably recovered by an error resilience decoder if the bitstream is subject to errors during transmission.

Heinzelman et al., however, fail to teach or to suggest the steps of the present invention which are not taught by Isnardi, Shur and Tewfik et al., taken singly or in combination, as required by amended independent Claim 1 from which Claim 4 depends. Accordingly, the rejection of Claim 4 under 35 U.S.C. §103(a) has been overcome and should be withdrawn. Notice to that effect is requested.

With respect to the rejection of Claims 6 and 16 under 35 U.S.C. §103(a) as being unpatentable over Isnardi in view of Shur and further in view of Zhu, Applicants respectfully submit that the rejection has been overcome by the amendment to Claims 1 and 12, respectively, and for the reasons that follow.

In the Office Action, the Patent Office asserts:

"*Isnardi* and *Shur* does not disclose the original codewords have a triplet form and wherein final codewords have a LAST coefficient=1.

Zhu discloses H.263 standard employing fixed Huffman tables for encoding what is calls "events" with 3 tuple defined as (LAST, RUN, LEVEL) with the LAST is a nonzero coefficient indication (col. 7, lines 50-56).

It would have been obvious to one of ordinary skill in the art at the time of the invention to employ the triplet form of event, as *Zhu* teaches, in the system of *Isnardi* and *Shur*, so as to make efficient usage of memory."

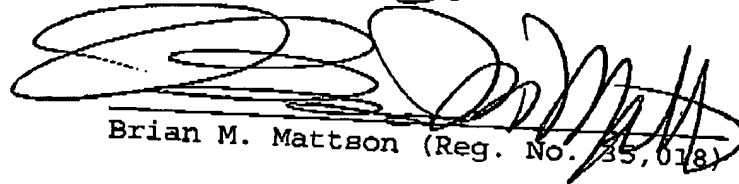
However, Claim 6 requires the original codewords to have a triplet form of EVENT = (RUN, LEVEL, LAST) and further wherein final codewords in the bitstream have a "LAST" coefficient = 1; and Claim 16 requires the codewords to have a triplet form of EVENT = (RUN, LEVEL, LAST) and further wherein final codewords in the bitstream have a "LAST" coefficient = 1.

Zhu, however, fails to teach or to suggest the steps and the elements of the present invention which are not taught by *Isnardi* and *Shur*, taken singly or in combination, as required by amended independent Claims 1 and 12, respectively, from which Claims 6 and 16, respectively, depend. Accordingly, the rejection of Claims 6 and 16 under 35 U.S.C. §103(a) has been overcome and should be withdrawn. Notice to that effect is requested.

Claims 2-11 and 14 depend from Claim 1; and Claims 13 and

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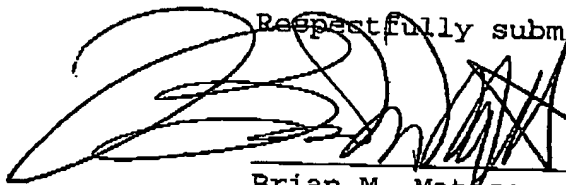
Brian M. Mattson (Reg. No. 35,018)

15-19 depend from Claim 12. These claims are further believed allowable over *Isnardi, Khansari et. al.* and *Zhu* for the same reasons set forth with respect to Claims 1 and 12 since each sets forth additional steps and novel elements, respectively, of Applicants' method and system, respectively.

In view of the foregoing remarks and amendments, Applicants respectfully submit that all of the claims in the application are in allowable form and that the application is now in condition for allowance. Further, Applicants submit that neither further search nor consideration would be necessitated by entry of this Amendment; therefore, entry of this Amendment is proper and should be effected.

If any outstanding issues remain, Applicants urge the Patent Office to telephone Applicants' attorney so that the same may be resolved and the application expedited to issue. Applicants request the Patent Office to indicate all claims as allowable and to pass the application to issue.

Respectfully submitted,



(Reg. No. 35,018)

Brian M. Mattson
Patents+TMS
A Professional Corporation
2849 W. Armitage Ave.
Chicago, Illinois 60647
Telephone: (773) 772-6009
Attorney for Applicants